REMARKS

Claims 16-23 are currently pending in this application. Claims 1-15 were cancelled and claims 16-43 were added by Preliminary Amendment. This Amendment amends claims 16-18, 20, 23, 24, 26, 31-33 and 39 and adds new claims 44 and 45. Support for the new claims and the amendments to the claims can be found in the specification and claims as originally filed. No new matter has been added.

The Examiner has rejected claims 20, 26, 32 and 39 under 35 U.S.C. §112, second paragraph, for indefiniteness. The Examiner asserts that these claims contain improper Markush language. To overcome this rejection, claims 20, 26, 32 and 39 along with claims 31 and 32 have been amended to include the proper Markush language. In view of the above, withdrawal of the rejection of claims 20, 26, 32 and 39 is respectfully requested.

The present invention, as claimed in amended independent claim 16, is directed to a resin for a binder suitable for mineral fibers, such as glass or stone wool. The resin comprises the reaction product of a polymer free mixture of an amine with a first anhydride and a second aromatic anhydride, wherein the first anhydride and the second aromatic anhydride are different anhydrides. None of the cited prior art references teaches or suggests a second aromatic anhydride or the new and unexpected results attributed to the use of the second aromatic anhydride.

The Examiner has rejected claims 16-19, 22-26, and 28-43 under 35 U.S.C. §103(a) for obviousness over U.S. Patent No. 6,071,994 to Hummerich et al. (hereinafter known as the "Hummerich patent") for the reasons discussed in Item 6, pages 3-5 of the Office Action. The Examiner asserts that it would have been obvious to one having ordinary

skill in the art at the time of the present invention to utilize a mixture of anhydrides with an amine via an aqueous solution polymerization and obtain the present invention. To overcome the rejection of claims 16-19, 22-26, and 28-43, independent claims 16 and 23 have been amended to specify the second anhydride as an aromatic anhydride. Support for the amendments to claims 16 and 23 can be found, for example, in dependent claims 18 and 24, respectively. For the reasons discussed below, independent claims 16 and 23 and dependent claims 17-19, 22, 24-26, and 28-43 are believed to be distinguishable over the Hummerich patent.

The Hummerich patent is directed to a formaldehyde-free aqueous binder comprising: A) a free-radically polymerized polymer containing from 5 to 100% by weight of units derived from an ethylenically unsaturated acid anhydride or from an ethylenically unsaturated dicarboxylic acid whose carboxyl groups can form an anhydride group, and B) an alkanolamine having at least two hydroxyl groups, with the aqueous binder including less than 1.5% by weight, based on the sum of A) + B), of a phosphorus-containing reaction accelerant (Col. 1, lines 5-15). Further, monomers A) of the Hummerich patent can be maleic acid or maleic anhydride, itaconic acid, 1,2,3,6-tetrahydrophthalic acid, 1,2,3,6-tetrahydrophthalic anhydride, their alkali metal and ammonium salts or mixtures thereof (Col. 2, lines 42-45). Polymerization of the binder in the Hummerich patent can be carried out in aqueous solution or dilution, wherein the monomers can be wholly or partly neutralized with bases, such as diethanolamine (Col. 7, lines 41-45), before or during the polymerization (Col. 7, lines 19-22). The Hummerich patent does not disclose any aromatic anhydrides, let alone teach or suggest the use of a second (aromatic) anhydride that is different from the first anhydride.

In addition, the Hummerich patent does not teach or suggest the new and unexpectedly improved results of a substantially improved "flowtime" from the use of the second aromatic anhydride. The flowtime measurement of the present invention corresponds to the curing time or curing speed of the binder composition. These new and unexpected results attributed to the use of a second aromatic anhydride are shown in Table 1 on pages 5 and 6 of the present specification. In Table 1, Binder 1 results in a flowtime of greater than ten (10) minutes for a binder composition having only one anhydride and no accelerators. Binder 2, which includes the Binder 1 composition plus a second anhydride (i.e., PTA), results in a flowtime of five (5) minutes. Binder 3, which includes the Binder 1 composition plus a second anhydride (i.e., TMA), results in a flowtime between three (3) and five (5) minutes. The results show at least a fifty (50) percent decrease in flowtime when a second aromatic anhydride is combined with the first anhydride in the binder composition of the present invention. Therefore, there is no motivation, suggestion, or reasonable expectation of success to use a second aromatic anhydride in the polymer composition as disclosed in the Hummerich patent and arrive at the new and unexpected results of a substantially reduced flowtime as disclosed in the binder of the present invention. In view of the above, reconsideration and withdrawal of the rejection of claims 16-19, 22-26, and 28-43 are respectfully requested.

The Examiner has rejected claims 17-21 and 24-27 under 35 U.S.C. §103(a) for obviousness over the Hummerich patent in view of U.S. Patent No. 6,392,006 to Van Benthem et al. (hereinafter "the Van Benthem patent"). The Examiner asserts that the anhydrides disclosed in the Van Benthem patent include aromatic anhydrides as listed in Col. 13, line 48. Further, the Examiner asserts that the anhydrides listed in the Van Benthem

patent can be utilized in the formation of the binder of the present invention. Therefore, the Examiner asserts that it would have been obvious to one having ordinary skill in the art at the time of the present invention to add the aromatic anhydride disclosed in the Van Benthem patent to the binder composition disclosed in the Hummerich patent and obtain the claimed invention. Applicants respectfully transverse the asserted rejection of the claims.

The Van Benthem patent relates to a polymer that can be used, for example, in thermosetting powder-paint compositions. The polymer can be obtained, for example, by reaction of a cyclic anhydride and an alkanolamine to form a β-hydroxyalkylamide (See Abstract). The Van Benthem patent does not teach or suggest the use of a second anhydride in a non-polymeric composition such as that of the present invention. As previously discussed, there is no motivation to use a second aromatic anhydride in the Hummerich patent. The motivation to use a second aromatic anhydride in a binding composition must come from the prior art references. There is no teaching, suggestion or motivation to combine the prior art references such that one skilled in the art would think to add the aromatic anhydride (i.e., second anhydride) disclosed in the Van Benthem patent to the polymer composition disclosed in the Hummerich patent and arrive at the new and unexpected results of an increase in flowtime of the binder composition of the present invention. In view of the above, reconsideration and withdrawal of the rejection of claims 17-21 and 24-27 are respectfully requested.

NEW CLAIMS

New independent claims 44 and 45 have been added to quantify the flowtime (i.e., curing speed) of the binding composition of the present invention. Support for new

claims 44 and 45 can be found, for example, in independent claims 16 and 23 respectively, in Table 1, and on page 6, lines 14-15 of the present specification. No new matter has been added.

In view of the foregoing, Applicants believe that claims 16-43 and new claims 44 and 45 are patentable over the prior art of record and are in condition for allowance. Reconsideration and withdrawal of the Examiner's rejections and allowance of claims 16-45 are respectfully requested.

Respectfully submitted,

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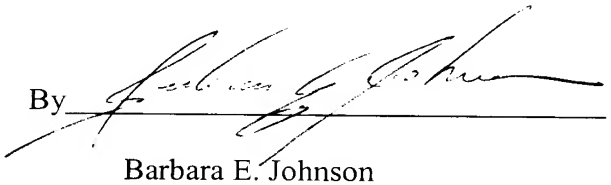
By 

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